

REMARKS

In response to the Office Action dated August 26, 2005, the applicants submit the enclosed amendment, including amendments to the claims and relevant remarks. Specifically, the applicants are resubmitting the prior response with claims 3, 4, 8, 9, 12, 16, 17, 19 and 20 properly identified parenthetically.

First, with respect to the rejection of claim 12 under Section 112, the applicants assert that the rejection is improper because air and water valves are not necessarily a means for precise titration of air and water (for example, the air and water valves could be on/off controls that would provide the user with no ability to partially adjust the mixture of air and water as he desired). In addition, claim 12 includes the limitation that the water tube extends the length of the handle, which is critical as compared to the cited references. Specifically, the Detsch reference includes a tube 70 (see figure 4) which does not extend the length of the handle and which will result in air blowback into the water line and "spitting" of the water in uncontrolled bursts because air pressure, typically 80 psi, is higher than water pressure, typically 40 psi (see affidavit of Dr. David Krill attached hereto referring to differences in typical air pressure and water pressures).

Turning to the rejections under section 103 based upon the Detsch and Gonser references, the applicants assert, first, that the rejection of claim 1 is unwarranted because the field replaceable air valve means and water valve means are positioned within the elongated handle. The field replaceable valves disclosed in the Gonser reference, and relied upon by the examiner, are distinguishable from the field replaceable valves of the present invention by their size and

orientation. The Gonser arrangement, assigned to Den-Tal-Ez, Inc., is well known to practicing dentists but is inadequate to perform as required by the present invention (see affidavits of Drs. Brandon Romick, Eric Henize, Erik Hollingsworth and David Krill attached hereto). The obvious combination resulting from the cited references would put the large Gonser valve block at the end of the Detsch instrument, not positioned within the handle. Claim 1 has been amended to further emphasize this critical difference by specifying that the air valve means and water valve means are incorporated within the handle. It is a critical feature of the present invention that the air and water valves are sufficiently small to be positioned within the handle so that the mirror assembly can be moved comfortably and easily, out of and within a patient's mouth. This is not possible with the Gonser assembly, the valve block of which is designed and intended to be outside the patient's mouth, with only the extended tube going into the patient's mouth.

With respect to the 103 rejection based upon Detsch and Gonser, claim 2 has been amended to more particularly point out the difference between it and the Gonser reference. Specifically, claim 2 has been amended to further define autoclavability as high temperature and high pressure sterilization. The Gonser reference relied upon the Examiner is limited to high temperature sterilization only (see column 6, lines 16-21). The four affidavits attached hereto, from Drs. Brandon Romick, Eric Henize, Erik Hollingsworth and David Krill, all recognize the necessity of autoclavability, which is now the standard in dental sterilization. Such was not the case in 1990, when the Gonser application was filed, and the applicants assert that it is erroneous to apply the present standard to the prior art when specific limitations (i.e. ability to withstand high pressure) are not disclosed, implied or obvious.

Claims 3 and 4 have been cancelled.

Turning to the 103 rejection of Claim 13 based upon Detsch and Gonser, the applicant

asserts that, with respect to the critical feature of the air and water valve means being linearly offset, the Detsch reference specifies that the pushbutton valves are "close together to permit them to be depressed manually by one finger or thumb" (column 5, lines 5-6). Claim 13 has been amended to point out that the linearly offset valves do not overlap so that the user's thumb naturally engages them. This feature is important because the claimed invention provides a user with the ability to finely control and mix the air and water being applied by "rolling" his thumb over the handle mounted valves to adjust the air and water mixture. The present invention contemplates use of the air and water cleaning provisions while the mirror is in the patient's mouth without requiring withdrawal. The pushbutton valves are specifically located as set forth in Claim 13 to allow the user's thumb to naturally engage them while holding the mirror. The Detsch reference, while recognizing the problem of putting the pushbutton close enough together to be operated by a single finger or thumb is not the same as contemplating the problem of positioning them so that they will be naturally engaged by the user's thumb. Based upon that distinction, the applicants assert that the rejection of claim 13 should be withdrawn.

Claim 17 stands rejected under 103 based upon the Detsch and Gonser references, and the applicants assert that the invention, as claimed in claim 17, is distinguishable because it includes retaining pins which are functionally distinct from the set screws in the Gonser reference. Specifically, the set screws in the Gonser reference put lateral pressure on the valve stems when they are tightened down, while the retaining pins merely hold the valves in place and prevent them from being blown out when air pressure is applied. The tightening down of the set screws in the Gonser device, particularly if they are overtightened, will cause the O rings 155, 156 to be "pinched", causing them to wear out prematurely.

With respect to the 103 rejections based upon the Detsch and Gonser references of claims

11, 12, 14, 15, 16 and 19, the applicants assert that such rejections are wholly unwarranted and should be withdrawn because there is no specific recitation of structure in the cited references. Specifically, there is no teaching or suggestion of a water orifice encircled by multiple air orifices (claim 11) and no teaching or suggestion of concentric air and water means extending the length of the handle (claim 12). In the Detsch reference, the air tube 70 does not extend the length of the handle (see Figure 4). This will create the obvious problem in the Detsch arrangement that water will have to flood the water tube 66 before any water will be expelled through the apertures 74, which may not occur at all given that air pressure in tube 70 is greater, typically 80 psi, than water pressure, typically 40 psi, in tube 66. In addition, when air only is selected, whatever water remains in tube 66 may be expelled even though water is not selected before pure air is achieved. The affidavit of Dr. David Krill, attached hereto, specifically recognizes the problem and this distinguishing feature of claim 12 compared to the Detsch reference. In summary, the shortened air tube 70 of the Detsch reference presents significant problems that are addressed and overcome by the present invention's spray pattern, as set forth in claim 11, and the concentric, co-extensive length of the air and water tubes set forth in claim 12.

Neither the Detsch nor Gonser references teach the claimed elements of quick disconnect means (claim 14), or means of cutting off air and water flow upon disconnect (claim 15).

It is unclear from the office action as to what structure in the Detsch or Gonser reference obviates the removable valve body section as set forth in claim 16. As set forth in the specification (see Figures 2, 3, 4 and 7 and the specification at page 17, line 17; page 18, lines 10-20; and particularly page 19 lines 9-15), the valve body section 30 is a distinct section of the handle that includes the field replaceable pushbutton valves, although provisions allow the entire section 30 be to easily removed and replaced (page 19 lines 9-15). There is no equivalent

structure, or suggestion of any such structure in the cited references. For that reason, the applicants assert that the rejection of Claim 16 is improper and should be withdrawn.

Turning to the 103 rejection of claim 19 based upon Detsch and Gonser, the applicants assert that, in essence, claim 19 is an alternative description of the spray pattern arrangement to that of claim 11 (see Figures 5 and 6 of the present specification) and that such rejection is again unwarranted because there is no teaching or suggestion in either of the cited references of a water jet surrounded by air jets. This arrangement and feature is vitally important because it gives the necessary atomization, or dispersion, of water under pressure directed at the mirror. As discussed above, the Detsch reference provides for an air tube 64 surrounded by a water tube 66 (see Figure 4). Air and water are combined, although the difference in air pressure (80 psi) and water pressure (40 psi) is problematic, as discussed above, and then air or water is emitted through orifices 74 (see Figure 4). Clearly the Detsch arrangement (an air tube surrounded by water tube, mixture expelled through orifices) differs from that set forth in claim 11 and claim 19 (water orifice or water jet surrounded by multiple air orifices or air jets), and there is no teaching or suggestion in the Detsch reference that air and water could be interchanged or obviously modified to arrive at the embodiment set forth in claim 11 or claim 19. As such, the applicants respectfully assert that the rejections of those claims should be withdrawn.

Next, turning to the 103 rejections of claims 1-4, 13-15 and 17 based upon the Freedman and Gonser references, the applicants assert that the Freedman reference certainly fails to supply the structure of air and water valve means incorporated within the handle as set forth in amended claim 1. In fact, Freedman's air and water valve means 3,7 are completely remote to the instrument (see Figure 1).

Further, the Freedman reference does not supply the necessity of making the materials

impervious to high temperature and high pressure sterilization required for autoclavability (claim 2 as amended herein), which the Gonser reference also lacks, as discussed *supra*.

The Freedman reference also fails to provide linearly offset valves naturally engaged by the user's thumb (claim 13), quick disconnect means (claim 14), and air and water cutoff means (claim 15). The rejection of claim 17 based upon Gonser remains unwarranted, for the reasons set forth above, and the Freedman reference, with its remote air and water valves, does not correct the disadvantages of the set screws of the Gonser reference stressing the valve's body stem and pinching the sealing O rings causing premature wear thereto.

Turning now to the 103 rejections of claims 5, 8, 9, 18, 20 and 21 based upon the combination of the Freedman, Gonser and Johnston references, the applicants assert, first, that the Johnston reference does not include pushbutton valves, or any other operator controls on the instrument itself. Thus, there is still no teaching or suggestion whatsoever of the necessity to align the mirror with handle mounted operator controls/pushbutton valves. For that reason, the rejection of claim 5 must be withdrawn. As confirmed in the affidavits of Drs. Brandon Romick, Eric Henize, Erik Hollingsworth and David Krill, attached hereto, the alignment of the mirror with the pushbutton valves is critical.

In addition, the Johnston reference includes only an air supply means 13, so it clearly did not contemplate or address the problems of an instrument having air and water supplied thereto. Alignment with both air and water orifices, as set forth in claim 8, requires consideration of the problem of running two lines of fluid through the handle, and aligning the mirror so that it lines up with both. Significant effort went into solving this problem in the present invention, resulting in making the lines concentric. Clearly the Johnston reference did not contemplate this problem or attempt a solution. Thus, the alignment provision set forth in the Johnston reference, applied

only to the single air line, does not obviate the alignment provisions as set forth in claim 8, and the applicants assert that that rejection should be withdrawn. In fact, the applicants assert that the Johnston reference would be problematic in that air blowing on the mirror would cause the mirror to be blown out of its collar and into the patient's mouth, insofar as no locking device is present thereon. In addition, the introduction of a second fluid line, the water line, complicates the alignment difficulties because the margin for alignment error is reduced, insofar as two fluids must now be directed at the mirror.

The cited references also fail to disclose structure obviating the longitudinal locking means for the mirror set forth in claim 9. Specifically, the applicants assert that the locking clamp 71 of the Freedman reference cannot be combined with the alignment provisions in the Johnston patent because it is a functional necessity for the mirror shank in the Johnston reference to have a longitudinal groove 73 (see Figures 3 and 4). A locking clamp similar to that disclosed in Freedman would not work with a slotted shank; the clamp cannot lock down onto a hollow groove. Thus, the locking means claimed in claim 9 is not obviated by the 3 cited references, and that rejection should be withdrawn. If the flat face of the Freedman device was clamped down on the slotted shank of the Johnston device, two problems result. First, the surface area of the shank onto which the clamp locks down would be very small and likely ineffective to hold the shank in place. Secondly, if the locking clamp is too rigid, the clamping down onto the slotted shank will flatten it and deform it, making it impossible to remove through the collar 69 (see Johnston figure 4). In addition, and perhaps most importantly, adding the size of the grooved mirror shank, the retaining collar, and a locking clamp to the outside of the mirror handle makes the device cumbersome, unwieldy and too large for use in a patient's mouth. As such, the rejection of claim 9 should be withdrawn.

The applicants assert that claim 18, depending from claim 8, is not obvious from the cited reference for all of the above stated reasons, but also because the alignment means, as set forth in claim 18, comprises a geometrically shaped shank and sleeve (see Figure 9B). The short heart-shaped conduit 69 and shank 25 with the groove 73 therein, disclosed in the Johnston reference, are not geometrically shaped and are inadequate to prevent rotational translation of the reflective surface.

Claim 18 of the present application also depends from claim 9, and thus includes a longitudinal locking means for the mirror shank. For the geometrically shaped shank and sleeve, this locking means may include a recess and internal locking device such as a set screw, spring loaded bearings, or locking collet fingers. Clearly such a recess and internal locking device were not contemplated by the Johnston grooved shank 25, or the Freedman clamp 72. Therefore, the applicants assert that the rejection of claim 18 is unwarranted and respectfully request that it be withdrawn.

The applicants have cancelled claim 20.

With respect to the 103 rejection of claim 21 based upon the three cited references, the applicants assert that the geometrically shaped shank and sleeve, having a longitudinal locking means has a locking device engaging the recess. Thus, the shank will always lock at the desired distance. There is no guesswork or approximation, as would always be the case with the grooved shank of the Johnston assembly, or with the stem 70 of the Freedman reference.

In summary, the applicants assert that, in light of the foregoing amendments and remarks, as well as the attached affidavits, all remaining claims 1, 2, 5, 8, 9, and 11-19 and 21 are now in a condition for allowance and respectfully request reconsideration thereof and an early notice to that effect.